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**Notice of Allowability**

Application No.

10/065,739

Applicant(s)

CHISTYAKOV, ROMAN

Examiner

Rodney G. McDonald

Art Unit

1753

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 10-19-04.
2. ☒ The allowed claim(s) is/are 1,2,4-17 and 19-42.
3. ☒ The drawings filed on 14 November 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 7-6-04
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
 RODNEY G. MCDONALD  
 PRIMARY EXAMINER

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kurt Rauschenbach on January 3, 2004.

The application has been amended as follows:

Claim 2, line 1, replace "the electric field" with "an electric field between the anode and the cathode assembly".

The following is an examiner's statement of reasons for allowance:

Claims 1, 2, 4-15 and 31-36 are allowable over the prior art of record because the prior art of record does not teach a sputtering source including a power supply that generates a voltage pulse between the anode and the cathode assembly, that creates a strongly ionized plasma from a weakly-ionized plasma, an amplitude and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly ionized plasma enough to generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target.

Claims 16, 17, 19-26 and 37-39 are allowable over the prior art of record because the prior art of record does not teach a method for high deposition rate sputtering including applying a voltage pulse to the cathode assembly to generate a strongly-ionized plasma from the weakly-ionized plasma, an amplitude and a rise time

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of the voltage pulse being chosen so that ions in the strongly-ionized plasma generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target, thereby increasing a deposition rate of the sputtering.

Claims 27-29 and 40-42 are allowable over the prior art of record because the prior art of record does not teach a sputtering source including a power supply that generates a voltage pulse between the anode and the cathode assembly that creates a strongly-ionized plasma from the weakly-ionized plasma, an amplitude and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly-ionized plasma enough to generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target and a gas controller that controls a flow of the feed gas to the strongly-ionized plasma to facilitate the creation of additional ions that generate additional thermal energy in the sputtering target.

Claim 30 is allowable over the prior art of record because the prior art of record does not teach a sputtering source including means for increasing the density of the weakly-ionized plasma, to generate a strongly-ionized plasma having a density of ions that generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

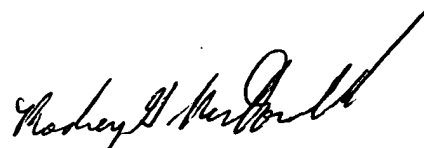
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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
January 4, 2005